AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

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1-13 (cancelled)

14 (currently amended). Method in connection with the production of mechanical pulp from ~~a~~ an unbleached cellulose-containing wood or non-wood raw material, comprising:

subjecting said unbleached material to a first refining step to produce primary fines consisting essentially of middle lamella fragments and materials originated from the parenchyma cells and containing lignin and extractives;

subjecting said material to a second refining step to produce strength-contributing secondary fines having about the same size as the primary fines but having a different composition; and

fractionating the pulp after said first refining step but before said second refining step, to separate primary fines from the pulp,

whereafter said separated primary fines are removed from said production of mechanical pulp.

15 (previously presented). Method according to claim 14, wherein said first refining step is adapted to achieve a high freeness in the pulp of at least 500 ml CSF.

16 (previously presented). Method according to claim 14, wherein said first refining step is adapted to achieve a yield a primary fines content of 3-15 % in the pulp.

17 (previously presented). Method according to claim 14, wherein said first refining step is adapted to achieve a high freeness in the pulp of 600-800 ml CSF.

18 (previously presented). Method according to claim 14, wherein said first refining step is adapted to yield a primary fines content of 5-10 %, in the pulp.

19 (previously presented). Method according to claim 14, wherein said pulp is subjected to a treatment step after said first refining step, but before said fractionation, in which treatment step the pulp is subjected to dilution, temperature enhancement, mechanical agitation and retention time.

20 (previously presented). Method according to claim 14, wherein said fractionation is performed by screening or by centrifugation.

21 (previously presented). Method according to claim 14, wherein said fractionation is performed in at least one curved screen.

22 (previously presented). Method according to claim 14, wherein said fractionation is performed by centrifugation in at least one cyclone.

23 (previously presented). Method according to claim 14, wherein said fractionation is performed in at least two steps.

24 (previously presented). Method according to claim 14, wherein 3-15% of said pulp, measured as dry weight, is separated from said pulp in said fractionation.

25 (previously presented). Method according to claim 14, wherein 5-10% of said pulp, measured as dry weight, is separated from said pulp in said fractionation.

26 (previously presented). Method according to claim 14, wherein said separated primary fines are used for heat recovery, for cattle food or in another line for pulp, paper or paperboard production.

27 (previously presented). Method according to claim 14, wherein the pulp is subjected to bleaching after the refining and fractionation steps.

28 (previously presented). Method according to claim 27, wherein the pulp is subjected to peroxide bleaching after the refining and fractionation steps.

29 (previously presented). Method according to claim 14, wherein said pulp is CTMP, CMP, TMP or HTCTMP.

30 (previously presented). Method according to claim 14, wherein said produced mechanical pulp is used in the production of paperboard.

31 (previously presented). Method according to claim 14, wherein said produced mechanical pulp is used in the production of paperboard intended for food or liquid related applications.

32 (withdrawn). Mechanical pulp from a cellulose containing material produced according to claim 14.

33 (withdrawn). Paperboard, at least partly produced from a mechanical pulp from a cellulose containing material produced according to claim 14.